# A Generalizable Scale of Propensity to Plan: The Long and the Short of Planning for Time and for Money

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Planning has pronounced effects on consumer behavior and intertemporal choice. We develop a six-item scale measuring individual differences in propensity to plan that can be adapted to different domains and used to compare planning across domains and time horizons. Adaptations tailored to planning time and money in the short run and long run each show strong evidence of reliability and validity. We find that propensity to plan is moderately domain-specific. Scale measures and actual planning measures show that for time, people plan much more for the short run than the long run; for money, short- and long-run planning differ less. Time and money adaptations of our scale exhibit sharp differences in nomological correlates; short-run and long-run adaptations differ less. Domain-specific adaptations predict frequency of actual planning in their respective domains. A "very long-run" money adaptation predicts FICO credit scores; low planners thus face materially higher cost of credit.

Planning is ubiquitous in consumers' everyday lives. We plan where to stop for gas on the way to work, check to be sure that the cash in our wallet will cover both lunch and a haircut, remember that we will need to stop at the mall after work to pick up a specific item, and enter a note in our planner so that we leave work in time to be home for dinner after shopping. Sometimes we plan for events in the longer term—about the logistics or expense of a vacation two months away or how to save for a down payment on a house. The present research aims to create a psychometrically sound measure of consumers' propensity to plan that is generalizable across important consumer planning domains. The scale permits situation-specific adaptation to the type of planning relevant to a researcher's particular study. The scale also permits comparison of a given consumer's propensity to plan in one domain versus another, much as prior researchers have asked the question of whether discount rates (Chapman 1996) and risk attitudes (Weber, Blais, and Betz 2002) are domain-specific or general and whether regret differs for events in the more recent or more distant past (Kivetz and Keinan 2006).

Planning and the lack of planning figure prominently in theories of consumer behavior. The first article ever printed in the *Journal of Consumer Research* made the broad case that consumer spending, saving, and wealth accumulation were focal topics for consumer research and that these were explained by psychological factors relating to how consumers planned and adapted to economic conditions (Katona 1974). Influential models of human behavior represented most behavior as planned and under the control of conscious intentions (Ajzen 1991; Ajzen and Fishbein 1980; cf. Gollwitzer 1999). Economic studies of forward-looking choice suggested that consumers make choices that maximize not just immediate utility, but utility over some planning horizon (Becker and Murphy 1988; Erdem and Keane 1996).

Not everyone plans equally, and individual differences in planning affect consumer well-being in important and varied ways. Formation of a detailed financial plan affects wealth accumulation (Ameriks, Caplan, and Leahy 2003), and one can argue that the 2007–9 mortgage crisis is in part a reflection of inadequate long-run planning by some home buyers. Retirement planning activities are associated with higher expected comfort (Anderson et al. 2000) and subsequent satisfaction in retirement (Elder and Rudolph 1999). Stewart and Vogt's (1999) study of vacation planning documents that some people desire to have a well-planned vacation versus a more spontaneous one, and this relates to satisfaction with the experience.

Planning is pertinent to intertemporal choice between smaller-sooner and larger-later rewards, where the smaller reward becomes more tempting as it draws nearer. Models of present-biased preferences in intertemporal choice presume that "sophisticates" plan to avoid the self-control problems that arise as a temptation draws near, but "naifs" do not (O'Donoghue and Rabin 2001). Such individual differences are relevant to procrastination (Ariely and Wertenbroch 2002) and compulsive or impulsive spending (Faber and O'Guinn 1992; Hayhoe, Leach, and Turner 1999). We therefore sought to develop a reliable and valid measure of consumers' propensity to plan that would be broadly useful to researchers studying topics such as intertemporal choice, self-control, intention-behavior relationships, habits, planning fallacies, behavioral finance, and how consumption planning affects human happiness.

## DEFINITION AND CONTENT DOMAIN OF PROPENSITY TO PLAN

Propensity to plan and its effects may vary by situation as well as by person. In this study, we consider propensity to plan for situations involving short-run and long-run uses of time and money. In any domain, we conceive of propensity to plan as reflecting individual differences in (a) frequency of forming planning goals, (b) frequency and depth of thinking through means of implementing subgoals, (c) use of activities and props to serve as reminders and to help see the big picture and constraints, and (d) personal preference to plan.

*Frequency of Goal Setting.* Classic cognitive psychology work on planning highlights the roles of goals, subgoals, and constraints. Hayes-Roth and Hayes-Roth (1979, 275–76) define planning as "the predetermination of a course of action aimed at achieving some goal." They distinguish planning as the first stage of a problem-solving process that may be coupled with a second "control" stage that guides the plan to a successful conclusion. There may be reciprocal influences between self-control and planning. Those who plan little have few occasions to exert self-control; those with weak self-control may learn over time that it is not instrumental to plan.

*Subgoals.* Miller, Galanter, and Pribram (1960) argued that planning involves both formulating goals and figuring out the steps needed to achieve them. One can have a goal A that can be broken up into more specific subgoals $\{a', a'', a'''\}$. Goal attainment is higher when goal intentions are made concrete by thinking of how, when, and where one will enact one's goal intentions, as with implementation intentions (Gollwitzer 1999; Gollwitzer and Sheeran 2006).

*Reminders and Props.* Plans do not occur in isolation. People often fail to complete plans due to unanticipated interruptions, simple forgetting, or failure to realize conflicts between competing plans. Miller et al. (1960, 65) argue that "usually the Plan will be competing with other Plans also in the process of execution, and considerable thought may be required in order to use the behavioral stream for advancing several Plans simultaneously." Differences in propensity to plan may thus be reciprocally related to the intensity of constraints. We therefore expect that those higher in propensity to plan may make more use of props such as calendars, maps, and lists that serve as reminders that help them see the big picture and identify constraints.

*Preference.* Finally, people differ in whether or not they like planning and have positive associations with it such as competence and security or negative associations such as lack of spontaneity (Stewart and Vogt 1999). More risk-averse people should have greater utility for planning (Ameriks et al. 2003), and those operating in unpredictable environments may see more benefits from improvising rather than planning (Moorman and Miner 1998). As a consequence, preference for planning relates to greater propensity to plan.

## DOMAIN SPECIFICITY OF PROPENSITY TO PLAN?

If chronic goals, constraints, and preferences are domain specific, it would not be surprising if propensity to plan were domain specific. Research on "situation-specific thinking style" shows that one can develop measures of stable cognitive traits pertaining to how consumers think in certain kinds of tasks (Kidwell, Hardesty, and Childers 2008; Lichtenstein, Netemeyer, and Burton 1995; Novak and Hoffman 2009; Weber et al. 2002). There is suggestive evidence that planning may be domain specific, consistent with our conceptualization of planning that highlights the role of goals, constraints, and preferences that might be domain specific. Ameriks et al. (2003) asked wealthy respondents whether they had spent a great deal of time developing a financial plan and found that this item predicted wealth accumulation. They expected, and found, that this item was positively correlated with time spent planning vacations. Khwaja et al. (2007) replicate the findings of Ameriks et al. but show that their single-item measures of time spent on financial plans and time spent on vacation plans correlate with each other but not with time spent planning smoking. It is unclear whether lack of correlations across domains reflects resource

specificity of planning, temporal instability of planning, or unreliability or invalidity of measurement.

*Time versus Money.* Consumers can plan about many things such as fertility (Bagozzi and van Loo 1978), smoking (Khwaja et al. 2007), or food consumption (Harnack et al. 1998). The scale that we develop can be extended to such topics, but we focus in this initial investigation on planning the use of two fundamental resources to consumer behavior, time, and money (Holbrook and Lehmann 1981; Jacoby, Szybillo, and Kohn Berning 1976). Research shows that people think differently about these two basic resources (Leclerc, Schmitt, and Dubé 1995; Liu and Aaker 2008; Mogilner and Aaker 2009; Okada and Hoch 2004; Saini and Monga 2008; Soman 2001; Spiller and Lynch 2009; Zauberman and Lynch 2005), so it is not obvious whether individual differences in propensity to plan for time will extend to money.

*Long Run versus Short Run.* Might there be stable differences among consumers in their short-run planning independent of their differences in long-run planning? Research on intertemporal choice and construal level theory has suggested that people think in fundamentally different ways about events in the next few days versus events that are weeks, months, or years away (O'Donoghue and Rabin 2001; Soman 1998; Trope and Liberman 2003; Zauberman and Lynch 2005). Our empirical studies examine the similarity of nomological correlates of propensity to plan for time and money in the short and long run.

Readers considering adopting our scale may have interests in consumers' planning in some domain other than those we investigate. We present evidence on whether our scale's relations to nomological correlates are general or domain specific, so later scholars can understand some of the limits of adaptation to new contexts.

## THE VALUE OF COMPARING PLANNING ACROSS DOMAINS

It is sometimes theoretically useful to *compare* thinking across different tasks, as when Kivetz and Keinan (2006) compared regret about events in the recent versus more distant past. However, this can only occur if measures of the constructs compared share a common metric. Our secondary goal—beyond having a scale that can be valid in different domains—was to make different versions of the same scale directly comparable, permitting study of phenomena explained by the *difference* between planning in one domain and another.

There are many areas of consumer research and psychology where predictions are based on the comparison of a consumer's level on two related constructs. For example, Weber et al. (2002) compared risk attitudes across domains of investments, gambling, recreation, ethical, and social risks. Others compared an individual's propensity for self-thoughts and other-related thoughts (Aaker and Lee 2001); actual, ideal, and ought self-concepts (Strauman and Higgins

1987); intensity of positive and negative emotion (Larsen and Diener 1987; Levav and McGraw 2009); and objective and subjective severity of events (Larsen, Diener, and Emmons 1986).

One can think of a number of interesting predictions based on consumers planning more in one domain than another that can be addressed only by having common scales to evaluate differences in propensity to plan in different domains. Zauberman and Lynch (2005) speculated that people may falsely expect that they will be less busy next month than today because they have plans and goals for the use of their time today, but few specific plans and goals for the use of their time in a month. They conjectured that people may be almost equally (un)likely to form specific goals and plans for their use of money today versus in a month. In the present research, we extrapolate from their conjecture to ask whether people might have higher propensities to plan for time in the short run than the long run. In contrast, might (middle-class) people have more equal propensities to plan for the use of money in the short run and the long run?

## PILOT STUDY

We developed a pool of 33 agree-disagree items that could be reworded to create four parallel versions relating to planning for use of time in the short run, time in the long run, money in the short run, and money in the long run. The 33 items pertained to frequency of forming planning goals (eight items); frequency and depth of thinking through means of implementing subgoals (eight items); use of activities and props to remind and to help see the big picture and constraints (nine items); and preference to plan (eight items). Short-run items referred to the next 1–2 days, based on intertemporal choice literature showing that people think differently about the next day or two compared to anything else (e.g., Soman 1998). Long-run items referred to the next 1–2 months, again, because this is a common long-run time frame in work on intertemporal choice (e.g., Trope and Liberman 2003). Later in this article we test a version of our final scale worded to pertain to the very long run of the next 1–2 years.

One hundred five adult respondents were recruited to complete a 115-item questionnaire (66 propensity to plan items plus 49 items assessing potentially related constructs). Respondents were randomly assigned to complete one of two questionnaires, one about time ($n = 53$) and one about money ($n = 52$). Each version included both the short- and long-run versions of the 33 propensity to plan items. Using factor and item analysis, it was possible to purify the original 33 ($\times$ 4) items to produce 19-item versions tailored to each of the four planning domains.

## STUDIES 1 AND 2: DEVELOPING PROPENSITY TO PLAN SCALE ADAPTATIONS

In studies 1 and 2, we refine our 19 items in each domain to create a highly reliable, valid, and short six-item scale of

propensity to plan. Numerous measurement scholars suggest that short, highly internally consistent scales are preferred (Clark and Watson 1995; Epstein et al. 1996; McFarland, Bloodgood, and Payan 2008; Netemeyer et al. 2002; Netemeyer, Bearden, and Sharma 2003; Richins 2004; Stanton et al. 2002). They argue that short scales are (1) easier to embed in a nomological network with a number of other constructs; (2) easier to intersperse with items tapping other constructs, reducing demand artifacts; and (3) are more likely to demonstrate unidimensionality. Practitioners insist on short scales to send to their constituencies, and national polls interpreting trends have a need for brief, reliable, and valid measures.

Study 1 involved a Web-based survey administered to a national paid panel of adult respondents. Study 2 was a paper-and-pencil survey administered to college students from the subject pool at the University of Virginia. Data from both studies were analyzed simultaneously to derive the final forms of the propensity to plan scale. In study 1, each respondent completed only one of the four versions of the propensity to plan items, along with measures of a common set of other constructs. This made it possible to assess whether correlates were common or domain specific. In study 2, each respondent completed all four versions of the propensity to plan items along with measures of other constructs, allowing a test of whether the four different versions of the final purified scale loaded on a single factor.

## Study 1: Procedures and Measures

Respondents were invited to participate via a survey link distributed by e-mail; the link randomly rerouted respondents to one of the four different versions of the survey. Each survey contained a different 19-item version of the scale: four different samples responded to the 19 long-run propensity to plan for money items; the 19 short-run propensity to plan for money items; the 19 long-run propensity to plan for time items; and the 19 short-run propensity to plan for time items. Usable responses were obtained from 95, 101, 98, and 102 respondents across samples, respectively. The entire survey took about 20 minutes to complete.

Each survey contained the same nomological correlates for assessing validity of the four versions of the propensity to plan scale. We included an eight-item conscientiousness scale (Saucier 1994); a five-item intolerance for uncertainty scale (Buhr and Dugas 2002); an eight-item need for closure scale (Neuberg, Judice, and West 1997); a 13-item self-control scale (Tangney, Baumeister, and Boone 2004); and a five-item need for cognition scale (Epstein et al. 1996). We expected these to relate to all four versions of our propensity to plan scale but sought empirical evidence of whether these exhibit similar or dissimilar relations to propensity to plan across domains. We thought that these constructs might be more related to time than money versions of our scale if propensity to plan is domain specific. We also included measures that might correlate more strongly with versions of our propensity to plan scale pertaining to money rather than time: an eight-item frugality scale (Las-

tovicka et al. 1999) and a six-item impulse buying scale (Rook and Fisher 1995). We added Ameriks et al.'s (2003) item about time inputs to financial planning, plus their yes-no "output" question about whether the respondent had personally gathered information for a detailed financial plan. Finally, we included the 11-item Crowne and Marlowe (1960) socially desirable responding scale to assess discriminant validity of our measures from this potential confound. Across the four surveys, items were randomly interspersed among and within constructs; respondents were never faced with more than three items per construct per screen page as they responded. All items were 6-point Likert scales.

After completion of these agree-disagree scales, we measured implementation intentions to acquire a set of 12 communications and entertainment technologies products taken from Alexander, Lynch, and Wang (2008). In long-run time and long-run money conditions, respondents rated their likelihood of acquiring each product in the next 2 months on a 6-point scale from very unlikely to very likely. In short-run time and short-run money conditions, they rated the likelihood of acquiring each product in the next 7 days. If respondents gave any response other than "very unlikely" or "unlikely" for a given product (e.g., flat-screen TV), they were asked a follow-up question about their implementation intentions: "Please answer the following question about what you were thinking when you said you intended to acquire each of the following products, as new or replacement products, in the next 2 months (7 days). I thought about exactly where and when I would buy a Flat screen (plasma) TV, 1 = strongly disagree, 6 = strongly agree." The survey ended with demographic questions.

## Study 2: Procedures and Measures

For study 2, we recruited undergraduate business students from an established participant pool at the University of Virginia. A total of 224 students received course credit for participation in a three-phase study spanning 3 months; 207 completed all three phases of the study, and usable responses across all analyses that follow ranged from 195 to 207. Spreading the items over multiple sessions reduced the likelihood that nomological relationships were due to demand effects. Appendix A shows what was measured in each phase in studies 2, 3, and 4.

*Phase 1.* Participants were instructed to report to a central location in predetermined groups of 30, where they completed the phase 1 survey in about 15 minutes. This survey contained the 19 short-run propensity to plan for money items and the 19 short-run propensity to plan for time items. This survey also contained the conscientiousness, intolerance for uncertainty, need for closure, and self-control scales used for validity assessment in study 1. We used two different versions of the survey, counterbalancing item order. In each version, items were randomly interspersed among and within constructs with the constraint that no page included more than four items per construct. All items were on 6-point scales.

*Phase 2.* Participants reported to the same central location in groups of 30, 1 week after phase 1. The 15-minute phase 2 survey contained the 19 long-run propensity to plan for money items and the 19 long-run propensity to plan for time items. This survey also contained the frugality and impulse buying scales used in study 1 and several other measures for validity assessment. We included the four-item "tightwad-spendthrift" scale (Rick, Cryder, and Loewenstein 2008) and four-item versions of the value consciousness and coupon proneness scales of Lichtenstein, Ridgway, and Netemeyer (1993). In addition, the last page of the survey included measures assessing the degree to which respondents followed up/carried through with their short-run time and money planning. These measures, labeled as "spent money as planned short-run" and "used time as planned short-run," read as follows:

> In terms of **short-term plans (past 1–2 days)** you had for **spending your money (time)**, to what extent did you actually spend your money (time) as you had planned over the **past 1–2 days**? Please circle one number on the "1" to "6" scale below.

Scale endpoints were labeled "I did not actually spend my money (time) as I planned to" and "I spent my money (time) exactly as I planned to."

*Phase 3.* Five weeks after completing phase 2, participants were e-mailed a one-page survey; they completed and e-mailed it back to the authors within the following week. This survey contained measures assessing the degree to which respondents followed up/carried through with their long-run time and money plans. Measures labeled below as "spent money as planned long-run" and "used time as planned long-run," read as follows:

> In terms of **long-term plans (past 1–2 months)** you had for **spending your money (time)**, to what extent did you actually spend your money (time) as you had planned over the **past 1–2 months**? Please circle one number on the "1" to "6" scale below.

Scale endpoints were labeled "I did not actually spend my money (time) as I planned to" and "I spent my money (time) exactly as I planned to."

## Analyses for Deriving the Final Forms of the Scales: Studies 1 and 2

Consistent with the prevailing scale development and psychometric literatures, we used an iterative confirmatory factor analytic (CFA) approach across multiple samples to derive the final forms of our propensity to plan scale (Clark and Watson 1995; Floyd and Widaman 1995; Netemeyer et al. 2003; Nunnally and Bernstein 1994; Richins 2004; Tian, Bearden, and Hunter 2001). Using the data from studies 1 and 2 we estimated several models with each iteration deleting items that (1) consistently showed low factor loadings

on their hypothesized factors (studies 1 and 2), (2) showed high cross-loadings on factors other than their hypothesized factors (study 2), and/or (3) showed high within- or across-factor correlated measurement errors (studies 1 and 2). With these criteria in place, we still retained items that we felt showed strong content or face validity to the propensity to plan construct (Haynes, Richard, and Kubany 1995).

Initially, we thought that the content domain of our four scales could potentially reflect separate subdimensions: frequency of goal planning, subgoal implementation, using props to plan and deal with constraints, and preference for planning. We had drafted items to tap these subdimensions. Based on this thinking, with our first iteration we estimated competing models for each of the four propensity to plan versions across studies 1 and 2. After testing alternative specifications, we determined that the data in each domain fit a one-factor model in which all 19 items were constrained to one overall first-order factor (Bagozzi and Heatherton 1994). Based on our item deletion criteria noted above, we retained 11 × 4 of the original 19 × 4 items and conducted a second CFA iteration on these 44 items. Across versions and studies, we found strong support in each domain for a one-factor model in which all 11 items formed a single factor; that is, four separate versions of a single scale applied to four distinct domains: (1) long-run use of money (LRM), (2) short-run use of money (SRM), (3) long-run use of time (LRT), and (4) short-run use of time (SRT).

With our last set of CFA iterations, we sought to form highly reliable and brief measures of these scales with items that still tapped our conceptualization of propensity to plan in terms of frequency of goal planning, subgoal implementation, using props, and preference to plan. Across both studies, we estimated a series of one-factor models for each scale version until well-fitting, internally consistent, and face and content valid six-item scales were derived. Appendix B shows the final form of the four scale versions, and table 1 shows estimates of model fit, internal consistency, and correlations among the four scale versions for study 2. (The four samples of study 1 were each exposed to one of the four propensity to plan scales versions, so correlations among the versions could not be estimated for study 1.)

## Model Fit, Internal Consistency, and Discriminant Validity: Studies 1 and 2

The top portion of table 1 shows that each propensity to plan scale version achieved adequate fit, with levels of .90 and above for both the comparative fit index (CFI) and nonnormed fit index (NNFI). For both indices, values above .90 have been considered "adequate" and values above .95 as "good" (Hair et al. 2009). Although some suggest that the root mean squared error of approximation (RMSEA) should be < .10 for adequate fit, this index shows poorer levels of fit for models with few degrees of freedom (Hair et al. 2009). In sum, our four versions of the scale provide adequate fits to their respective model specifications.

In terms of internal consistency, the middle portion of

**TABLE 1**

FIT AND INTERNAL CONSISTENCY ESTIMATES OF THE ONE-FACTOR
PROPENSITY TO PLAN SCALES

| | Model fit | | | | |
|---|---|---|---|---|---|
| | $\chi^2$ | df | CFI | NNFI | RMSEA |
| Study 1: | | | | | |
| Short-run money (SRM) | 34.95 | 9 | .95 | .94 | .12 |
| Long-run money (LRM) | 9.21 | 9 | 1.00 | .99 | .02 |
| Short-run time (SRT) | 10.25 | 9 | 1.00 | .99 | .04 |
| Long-run time (LRT) | 15.30 | 9 | .98 | .97 | .08 |
| Study 2: | | | | | |
| Short-run money (SRM) | 29.50 | 9 | .96 | .95 | .10 |
| Long-run money (LRM) | 45.04 | 9 | .96 | .94 | .13 |
| Short-run time (SRT) | 44.80 | 9 | .94 | .92 | .13 |
| Long-run time (LRT) | 38.59 | 9 | .96 | .95 | .13 |

| | Internal consistency | | | |
|---|---|---|---|---|
| | Coefficient alpha | | Variance extracted | |
| | Study 1 | Study 2 | Study 1 | Study 2 |
| Short-run money (SRM) | .90 | .88 | .61 | .56 |
| Long-run money (LRM) | .90 | .92 | .62 | .65 |
| Short-run time (SRT) | .90 | .90 | .59 | .60 |
| Long-run time (LRT) | .92 | .90 | .64 | .61 |

| | Study 2: Correlations among propensity to plan scales | | | |
|---|---|---|---|---|
| | SRM | LRM | SRT | LRT |
| Short-run money (SRM) | 1.00 | | | |
| Long-run money (LRM) | .74 | 1.00 | | |
| Short-run time (SRT) | .27 | .30 | 1.00 | |
| Long-run time (LRT) | .30 | .43 | .71 | 1.00 |

table 1 shows highly reliable measures. Given that coefficient alpha rises with the number of items in the scale ceteris paribus (Clark and Watson 1995), six-item scale versions with alpha estimates in the .90 range indicate highly internally consistent measures (Netemeyer et al. 2003; Nunnally and Bernstein 1994). Variance extracted indicates the amount of variance explained by the measure in a scale relative to that due to measurement error (Fornell and Larcker 1981). Some advocate that variance extracted estimates should exceed .50 to indicate strong within-scale convergent validity (internal consistency). All four scale versions across both studies exceeded this criterion.

Finally, the bottom portion of table 1 shows the correlations among our propensity to plan scales from estimating a four-factor confirmatory model with study 2 data ($\chi^2 =$ 556.23, df = 246, CFI = .91, NNFI = .90, RMSEA = .08). On two commonly accepted tests (Anderson and Gerbing 1988; Fornell and Larcker 1981), these correlations showed evidence of discriminant validity among the LRM, SRM, LRT, and SRT scale versions. This implies that there is a degree of domain specificity in propensity to plan.

## Nomological Validity: Studies 1 and 2

*Bivariate Correlational Analyses.* Nomological validity is a form of construct validity that encompasses the-

oretically hypothesized relationships among antecedents, outcomes, or general correlates of a proposed measure (Campbell 1960; Cronbach and Meehl 1955; Nunnally and Bernstein 1994). Thus, we examine whether, in studies 1 and 2, our four propensity to plan scale versions have similar or different correlations to outside constructs. Table 2 shows these correlations and coefficient alpha estimates of internal consistency of the validity measures.

For both studies, it was predicted that all four propensity to plan scale versions would be positive correlates of conscientiousness, intolerance for uncertainty, need for closure, and self-control. These predictions encompassed estimating 32 correlations across studies 1 and 2. As table 2 shows, 29 of these correlations were significant, and those three that were not significant (LRM-intolerance for uncertainty, SRM-intolerance for uncertainty, and SRM-need for closure of study 1) were in the predicted direction. We also checked for social desirability bias. In only one case was there evidence that our propensity to plan scales were tainted by such bias (LRM-social desirability bias $r = .41$).

Given evidence in table 1 that propensity to plan is somewhat domain specific, we anticipated that frugality, "tightwadness," coupon proneness, and value consciousness would be positive correlates of LRM and SRM, and that impulse buying would be negatively related to LRM and

**TABLE 2**

NOMOLOGICAL VALIDITY CORRELATES OF THE PROPENSITY TO PLAN SCALES

| | Study 1: Nomological validity correlations | | | |
| --- | --- | --- | --- | --- |
| | SRM[a] | LRM | SRT | LRT |
| Conscientiousness (.80–.88)[b] | .27 | .36 | .29 | .33 |
| Intolerance for uncertainty (.81–.85) | .08 (NS) | .12 (NS) | .26 | .41 |
| Need for closure (.78–.85) | .14 (NS) | .30 | .45 | .50 |
| Self-control (.78–.85) | .34 | .48 | .23 | .34 |
| Need for cognition (.68–.80) | .12 (NS) | .33 | .22 | .23 |
| Ameriks financial planning (.76–.87) | .54 | .44 | .34 | .45 |
| Frugality (.70–.84) | .46 | .55 | .24 | .35 |
| Impulse buying (.84–.88) | −.35 | −.40 | −.31 | −.26 |
| Social desirability bias (.67–.81) | .17 (NS) | .41 | −.05 (NS) | .10 (NS) |
| | Study 2: Nomological validity correlations | | | |
| | SRM | LRM | SRT | LRT |
| Conscientiousness (.80)[c] | .13 | .16 | .60 | .35 |
| Intolerance for uncertainty (.86) | .20 | .20 | .30 | .35 |
| Need for closure (.86) | .25 | .25 | .45 | .43 |
| Self-control (.86) | .27 | .24 | .41 | .33 |
| Frugality (.77) | .38 | .38 | .18 | .14 |
| Impulse buying (.83) | −.24 | −.24 | −.13 (NS) | −.10 (NS) |
| Tightwad scale (.77) | .30 | .34 | .08 (NS) | .04 (NS) |
| Coupon proneness (.83) | .34 | .28 | .17 | .22 |
| Value consciousness (.70) | .26 | .34 | .21 | .16 |
| Spent money as planned—short run | .42 | .35 | .17 | .19 |
| Spent money as planned—long run | .28 | .28 | .26 | .05 (NS) |
| Used time as planned—short run | .10 (NS) | .11 (NS) | .41 | .35 |
| Used time as planned—long run | .00 (NS) | .00 (NS) | .44 | .28 |

[a]SRM, LRM, SRT, and LRT denote propensity to plan scale versions for short-run money, long-run money, short-run time, and long-run time, respectively.

[b]Values in parentheses for study 1 represent the range of coefficient alpha estimates across the four samples for these validity measures of study 1. "NS" denotes a nonsignificant correlation.

[c]Values in parentheses for study 2 represent the coefficient alpha estimates of these validity measures for study 2. "NS" denotes a nonsignificant correlation.

SRM. These tests encompassed 14 correlations across the two studies, and all 14 correlations were significant in the expected directions.

For study 1, we gathered measures of need for cognition and "input" and "output" financial planning questions from Ameriks et al. (2003). We expected all four of our propensity to plan scale versions to be positive correlates of need for cognition, and our two propensity to plan use of money versions to be positive correlates of the sum of the two correlated Ameriks et al. questions. Table 2 shows that this prediction was supported for three of four need-for-cognition correlations and both financial planning correlations. Both of our propensity to plan use of time scales also correlated with the financial planning sum. This is unsurprising; both financial planning items have been found to correlate strongly with vacation planning (Khwaja et al. 2007), indicating that they may relate to propensity to plan for both time and money.

For study 2, we gathered single-item measures assessing the degree to which respondents carried through with their long- and short-run plans. We expected that "spent money as planned" long and short run would be positively related to LRM and SRM, and that "used time as planned" long and short run would be positively related to LRT and SRT.

As the bottom of table 2 shows, all four of these predicted correlations were positive and significant.

In sum, these simple bivariate correlational analyses showed that 54 of the 58 predicted correlations of our propensity to plan scales with the nomological validity constructs were found, with only the LRM version of the planning scale suggesting social desirability bias. Nomological relations showed sensible patterns of domain specificity. It appears that propensity to plan is domain specific, with different antecedents and consequences of planning for time versus money.

*Comparing Bivariate Correlations in Study 2.* If there is value in adapting our scale for a researcher's time or money context, we should find that the time and money versions correlate differently with outside constructs (Clark and Watson 1995; Netemeyer et al. 2003). For example, given that conscientiousness, intolerance for uncertainty, need for closure, and self-control have time elements embedded in their conceptualizations, we expected that the propensity to plan for time scales (long and short run) would be more strongly related to these constructs than the propensity to plan for money scales. Similarly, given that frugality, impulse buying, tightwadness, coupon proneness, and

**TABLE 3**

STUDY 2: NOMOLOGICAL VALIDITY CORRELATION COMPARISONS ACROSS
PROPENSITY TO PLAN DOMAINS

| Correlation comparison | t-value |
|---|---|
| Conscientiousness-SRT (.60) > conscientiousness-SRM (.13) | 6.88[a] |
| Conscientiousness-SRT (.60) > conscientiousness-LRM (.16) | 6.39 |
| Conscientiousness-LRT (.35) > conscientiousness-SRM (.13) | 2.77 |
| Conscientiousness-LRT (.35) > conscientiousness-LRM (.16) | 2.68 |
| Intolerance for uncertainty-SRT (.30) > intolerance for uncertainty-SRM (.20) | 1.22 (NS) |
| Intolerance for uncertainty-SRT (.30) > intolerance for uncertainty-LRM (.20) | 1.24 (NS) |
| Intolerance for uncertainty-LRT (.35) > intolerance for uncertainty-SRM (.20) | 1.89 |
| Intolerance for uncertainty-LRT (.35) > intolerance for uncertainty-LRM (.20) | 2.09 |
| Need for closure-SRT (.45) > need for closure-SRM (.25) | 2.59 |
| Need for closure-SRT (.45) > need for closure-LRM (.25) | 2.64 |
| Need for closure-LRT (.43) > need for closure-SRM (.25) | 2.36 |
| Need for closure-LRT (.43) > need for closure-LRM (.25) | 2.60 |
| Self-control-SRT (.41) > self-control-SRM (.27) | 1.79 |
| Self-control-SRT (.41) > self-control-LRM (.24) | 2.20 |
| Self-control-LRT (.33) > self-control-SRM (.27) | .76 (NS) |
| Self-control-LRT (.33) > self-control-LRM (.24) | 1.25 (NS) |
| Frugality-SRM (.38) > frugality-SRT (.18) | 2.47 |
| Frugality-SRM (.38) > frugality-LRT (.14) | 2.53 |
| Frugality-LRM (.38) > frugality-SRT (.18) | 3.03 |
| Frugality-LRM (.38) > frugality-LRT (.14) | 3.37 |
| Impulse buying-SRM (-.24) > impulse buying-SRT (-.13) | 1.31 (NS) |
| Impulse buying-SRM (-.24) > impulse buying-LRT (-.10) | 1.34 (NS) |
| Impulse buying-LRM (-.24) > impulse buying-SRT (-.13) | 1.69 |
| Impulse buying-LRM (-.24) > impulse buying-LRT (-.10) | 1.74 |
| Tightwad scale-SRM (.30) > tightwad scale-SRT (.08) | 2.65 |
| Tightwad scale-SRM (.30) > tightwad scale-LRT (.04) | 3.24 |
| Tightwad scale-LRM (.34) > tightwad scale-SRT (.08) | 3.20 |
| Tightwad scale-LRM (.34) > tightwad scale-LRT (.04) | 4.18 |
| Coupon proneness-SRM (.34) > coupon proneness-SRT (.17) | 2.07 |
| Coupon proneness-SRM (.34) > coupon proneness-LRT (.22) | 1.35 (NS) |
| Coupon proneness-LRM (.28) > coupon proneness-SRT (.17) | 1.80 |
| Coupon proneness-LRM (.28) > coupon proneness-LRT (.22) | .49 (NS) |
| Value consciousness-SRM (.26) > value consciousness-SRT (.21) | .61 (NS) |
| Value consciousness-SRM (.26) > value consciousness-LRT (.16) | 1.67 |
| Value consciousness-LRM (.34) > value consciousness-SRT (.21) | 1.22 (NS) |
| Value consciousness-LRM (.34) > value consciousness-LRT (.16) | 2.48 |

[a]Except where noted by "NS," all t-values show significant differences at the .05 level or better.

value consciousness have money attitudes/behaviors in their conceptual domains, we expected that the propensity to plan for money scales (long and short run) would be more strongly related to these constructs than the propensity to plan for time scales. We therefore conducted a series of t-tests assessing the differences between dependent correlations. These tests consider "whether some variable X correlates with Y to a significantly different degree than does another variable V" (Cohen and Cohen 1983, 56–57). Note that these analyses require that all three variables—X, Y, and V—be measured in the same sample; as such these analyses were possible for study 2 only.

Table 3 shows that 26 of 36 correlation comparisons were significant in the expected direction, showing support for our propensity to plan scale and suggesting domain specificity. For example, the conscientiousness–propensity to plan long-run time (LRT) correlation was .35; the conscientiousness–propensity to plan long-run money (LRM) correlation was .16. The difference between these two correlations was significant ($t = 2.68$, $p < .01$). Likewise, the tightwad scale–propensity to plan long-run money (LRM) correlation (.34) was greater than the tightwad scale–propensity to plan long-run time (LRT) correlation (.04; $t = 4.18$, $p < .01$). Although these high-power analyses could only be conducted for study 2, the top portion of table 2 shows that study 1 correlations of the propensity to plan

**TABLE 4**

STUDY 2: PREDICTIVE VALIDITY OF THE PROPENSITY TO PLAN SCALES

| | Predictor variable | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | SRM | | LRM | | SRT | | LRT | | |
| Dependent variable | B | t-value | B | t-value | B | t-value | B | t-value | $R^2$ |
| Spent money as planned—short run: | | | | | | | | | |
|   Step 1 | .53 | 6.59[a] | . . . | . . . | . . . | . . . | . . . | . . . | .18 |
|   Step 2 | .39 | 3.29 | .12 | .94 (NS) | .27 | 2.20 | −.07 | −.56 (NS) | .19 |
| Spent money as planned—long run: | | | | | | | | | |
|   Step 1 | . . . | . . . | .31 | 3.91 | . . . | . . . | . . . | . . . | .08 |
|   Step 2 | .14 | 1.26 (NS) | .22 | 1.77 (NS) | .22 | 2.14 | −.18 | −1.70 (NS) | .10 |
| Used time as planned—short run: | | | | | | | | | |
|   Step 1 | . . . | . . . | . . . | . . . | .60 | 6.89 | . . . | . . . | .19 |
|   Step 2 | −.02 | −.20 (NS) | −.02 | −.20 (NS) | .54 | 4.23 | .09 | .75 (NS) | .19 |
| Used time as planned—long run: | | | | | | | | | |
|   Step 1 | . . . | . . . | . . . | . . . | . . . | . . . | .28 | 3.85 | .08 |
|   Step 2 | −.07 | −.73 (NS) | −.06 | −.53 (NS) | .50 | 4.44 | .01 | .13 (NS) | .17 |

[a]Except where noted by "NS," all t-values show significant differences at the .05 level or better.

scale versions exhibited a similar pattern: 21 of the 28 relevant comparisons were in the expected direction (excluding need for cognition that seems equally relevant to time and money). Using study 1 data, we also pitted our propensity to plan versions for use of money scales (LRM and SRM) against the Ameriks et al. (2003) financial planning items for ability to predict frugality and impulse buying. Frugality is better predicted by our SRM version than by Ameriks ($r = .46$ vs. .28; $t_{diff} = 2.056$, $p = .042$) in one sample, and by our LRM version than by Ameriks ($r = .55$ vs. .24; $t_{diff} = 3.359$, $p = .001$) in another sample. Impulse buying was nonsignificantly better predicted by our SRM version than by Ameriks ($r = −.36$ vs. −.23; $t_{diff} = 1.383$, $p = .17$) and significantly better predicted by our LRM version than by Ameriks ($r = −.40$ vs. −.19; $t_{diff} = 2.185$, $p = .031$). Further, as expected, propensity to plan versions for short-run and long-run use of time were not better than Ameriks in predicting frugality and impulse buying; all $p$'s > .40.

## Evidence of Predictive Validity

*Study 1: Propensity to Plan and Implementation Intentions.* A construct's validity is also evidenced by the degree to which it is predictive of some theoretical outcome (Cronbach and Meehl 1955; Nunnally and Bernstein 1994). Recall that in study 1, we asked respondents who had completed either short-run time or short-run money versions of the propensity to plan scale about their likelihood of acquiring each of 12 new technologies in the next week, and we asked those completing long-run time or long-run money propensity to plan versions about their likelihood of acquiring the same 12 technologies in the next 1–2 months. Those responding "somewhat unlikely" to "very likely" for any product were asked to agree or disagree that their answer had caused them to think about where and when they would buy. Unsurprisingly, incidence rates were low for all 12

products, particularly for acquiring in the next week (9%–25% of the full sample for sample sizes of 8–23). Despite the low $n$'s, these implementation intention responses were strongly related to the short-run time and short-run money scales (weighted average $r$'s = .57 and .66, respectively), but not the long-run time or money planning versions (weighted average $r$'s = .13 and −.02). Looking at the 12 individual products, there were no significant correlations of thinking about where and when to buy with either long-run version of the scale. Nine of the 12 such correlations were significant at $p < .05$ for the SRM version, and seven of the 12 such correlations were significant for the SRT version. Propensity to plan in the short run relates more than propensity to plan in the long run to forming implementation intentions—thinking about not just what to do, but how, where, and when (Gollwitzer 1999).

*Study 2: Propensity to Plan and Follow-Through on Intentions.* In study 2 we collected single-item measures assessing the degree to which study participants followed up with their long- and short-run money and time plans: spent money as planned, long and short run; and used time as planned, long and short run. For the short run, participants responded to these measures 1 week after they had responded to the short-run propensity to plan money and time scales. For the long run, participants responded to these measures about 5 weeks after they had responded to the long-run propensity to plan money and time scales. To assess the predictive validity of the propensity to plan scales, we conducted a series of hierarchical regressions with these measures as dependent variables. In step 1 of each hierarchical regression, we entered the "matching" version of the propensity to plan scale to predict "spent time/money as planned." One can see from table 4 that the matching predictor was significant in all four step 1 tests, with $R^2$ of .18, .08, .19, and .08 for SRM, LRM, SRT, and LRT, respectively.

In step 2, we used all four versions of the scale to predict

**TABLE 5**

STUDY 1: EFFECTS OF INCOME ON PROPENSITY TO PLAN FOR MONEY
IN SHORT RUN AND LONG RUN

|  | Below average income | Average income | Above average income |
|---|---|---|---|
| Short-run propensity to plan for money: |  |  |  |
| M | 3.87 | 3.65 | 3.42 |
| SD | 1.13 | 1.07 | .98 |
| n | 36 | 28 | 26 |
| Long-run propensity to plan for money: |  |  |  |
| M | 3.56 | 3.60 | 4.09 |
| SD | 1.10 | .76 | 1.01 |
| n | 48 | 24 | 20 |

NOTE.—Propensity to plan measured as the average of six items in app. B, from 1 (lowest planning) to 6 (highest planning).

the "spent time/money as planned" criterion. If propensity to plan were entirely domain specific, the step 2 models should not explain substantial incremental variance compared to the step 1 models. Table 4 shows this to be true for spending money as planned in the short run (step 2 $R^2 = .19$ vs. step 1 .18), money in the long run (.10 vs. .08), and time in the short run (.19 vs. .19), but not for spending time as planned in the long run (.17 vs. 08). Second, if propensity to plan is entirely domain specific, the coefficient on the matching version of the scale should be significant and the three nonmatching versions should not in the step 2 models. We can see from table 4 that the matching coefficient is significant for two short-run versions (SRM ($B = .39$, $t = 3.29$, $p < .05$), SRT ($B = .54$, $t = 4.23$, $p < .01$)), marginally significant for LRM ($B = .22$, $t = 1.77$, $p < .08$), and not significant for LRT ($B = .01$, $t = 0.13$, NS). Nine of 12 possible nonmatching coefficients were nonsignificant, but SRT predicted spending money as planned in both the short run ($B = .27$, $t = 2.20$, $p < .05$) and the long run ($B = .22$, $t = 2.14$, $p < .05$), and predicted spending time as planned in the long run ($B = .50$, $t = 4.44$, $p < .01$) and, in the latter case, reduced LRT to nonsignificance when both were in the step 2 model.

In sum, all four versions of the propensity to plan scale showed domain matching predictive validity in step 1 tests. Three of four step 2 tests explained little incremental variance from adding other versions of the scale to the regression. Across four step 2 regressions, "nonmatching" versions of the scale were significant predictors in three of 12 possible tests; in those three, the SRT version of the scale added predictive validity at step 2.

## Demographics and Propensity to Plan

In study 1, our national sample had wide variation on demographic measures that might be related to propensity to plan. Age proved to be unrelated to planning; 368 participants over 18 reported their age on a scale from 18–34, 35–50, 51–64, and 65 and older. We treated age as a continuous variable and mean centered it to consider the simple interactions. No factor involving age was significant (all $p$'s

> .44). These results were no different if age was treated as a categorical variable (all $p$'s > .13).

We did observe relationships between income and propensity to plan the use of money. Of the participants who responded to the money short or money long scale, 182 reported income: "In the U.S., the average household income is about \$48,000 per year. Considering your own household income (not your parents'), would you describe that income as: below the average, about equal to the average, above the average?" We analyzed propensity to plan score as function of income (below average, average, above average) and horizon (short, long). The interaction was significant ($F(2, 176) = 3.29$, $p = .039$), so we considered the simple linear relationships between income and propensity to plan separately for the short run and the long run. Short-run propensity to plan decreased with income ($F(1, 176) = 2.76$, $p = .099$) whereas long-run propensity to plan increased with income ($F(1, 176) = 3.78$, $p = .054$). Means and standard deviations are reported in table 5. Similar analyses for use of time showed no effects.

## Summary of Pilot Study and Studies 1 and 2

These first three studies, encompassing six samples and 708 respondents, were used to develop parallel versions of a six-item scale of propensity plan for time and money in both the short run and the long run. We found that each version showed (1) evidence of unidimensionality, (2) strong internal consistency (coefficient alpha ranging from .88 to .92), (3) evidence of discriminant validity among the four versions of planning, (4) evidence of discriminant validity from related constructs, (5) nomological validity with potential antecedents and consequences, (6) evidence of incremental validity over that of the financial planning input and output items by Ameriks et al. (2003) with other money-related scales, and (7) evidence of predictive validity to self-report time and money planning-related outcomes. Across all of these tests, we saw evidence of domain specificity of propensity to plan and validity within domain. This suggests that researchers may find it worthwhile to adapt our scale to their own contexts.

# STUDY 3: DIARY STUDY OF ACTUAL PLANNING

The primary purposes of study 3 are (1) to test whether our four scales predict objective measures of actual plan formation and (2) to assess how individuals' propensities to form plans systematically vary according to resource and horizon. We found (although not reported because of space constraints) that individuals in study 2 reported higher propensities to plan for the short run than the long run and that this difference was greater for time than it was for money. Zauberman and Lynch (2005) found stronger discounting of future time than of future money. One speculative explanation for their finding is that people form plans for their use of time in the short run but not for their use of time several weeks out, and that this greater plan formation in the short run than the long run makes people falsely believe that they will be less busy in a month than they are today. If people are equally (un)likely to form plans for their use of money today as for their use of money in the next few months, this would lead to a perception of equal "slack" for money in the short run and long run and lower discounting of future money than of future time. Studies 3 and 4 test whether there are such differences in propensities to plan, and study 3 tests whether any such difference is reflected in the frequency of actual plan formation.

## Method

*Participants and Procedure.* Ninety-three undergraduate and graduate students at Duke University participated in a nine-wave study in exchange for payment of $9 for an initial 20-minute survey and $2 for each of eight 5-minute surveys to be sent every 2 days after the initial survey. Those completing at least four of the eight follow-up surveys were paid a bonus of $20 for completing a tenth survey about 6 weeks later for another research project.

In survey 1, participants filled out an online survey that included the finalized six-item scales of propensity to plan for the use of time in the short run, money in the short run, time in the long run, and money in the long run. Following this, for another research project, participants were asked to describe briefly four existing, but as-yet-unfulfilled plans and to estimate resources necessary to complete those plans. Participants were then dismissed and told that they would receive a short 5-minute survey in 2 days and every 2 days thereafter for a total of nine surveys, plus one more follow-up survey approximately 1 month later.

In surveys 2–9, people were asked to report whether, in the last 2 hours, they had made a plan of each of the four types:

> Please let us know whether you did one or more of these four kinds of planning in the *last 2 hours.* (Please exclude any plans you made to remember to fill out this survey.)
>
> We are looking here for thoughts you have *actually* had in the last two hours, planning your use of time and money.

We are just as interested in whether you did *not* engage in certain kind of planning as if you *did.*

1. In the last 2 hours, did you make any short term plans for how to use or budget your *money* over the next one or two days? (Yes, No)
2. In the last 2 hours, did you make any long term plans for how to use or budget your *money* one to two months in the future? (Yes, No)
3. In the last 2 hours, did you make any short term plans for how to use or budget your *time* over the next one or two days? (Yes, No)
4. In the last 2 hours, did you make any long term plans for how to use or budget your *time* one to two months in the future? (Yes, No)

Those responding yes to a question were asked to describe the plan in a sentence. These questions were followed by measures of completion of short-run plans for another research project. Eighty-five participants completed four or more of the eight follow-up diary surveys 2–9 and were included in the analyses that are reported below.

*Dependent Variables.* The main dependent variables were (1) propensity to plan scale scores from survey 1 for short-run use of time, short-run use of money, long-run use of time, and long-run use of money, where each scale can range from 1 (lowest propensity to plan) to 6 (highest propensity to plan) and (2) proportion of completed surveys 2–9 in which the respondent reported having made a short-run plan for the use of time, short-run plan for the use of money, long-run plan for the use of time, or long-run plan for the use of money.

## Results

*Analysis of Mean Propensity to Plan Scores.* For each respondent, we computed propensity to plan scores for the four six-item scales. Means and standard deviations for each scale were: time in the short run ($M = 4.65$, SD $= 0.90$); time in the long run ($M = 3.98$, SD $= 0.97$); money in the short run ($M = 3.52$, SD $= 1.06$); and money in the long run ($M = 3.74$, SD $= 1.01$). We analyzed these scores in a $2 \times 2$, resource $\times$ horizon repeated-measures design. As in study 2, we found significant main effects of resource ($F(1, 92) = 36.46$, $p < .0001$), horizon ($F(1, 92) = 8.12$, $p = .0054$), and a significant interaction ($F(1, 92) = 49.45$, $p < .0001$). Mean propensity to plan scores were higher for time than for money, higher for the short run than the long run, and the difference between short-run and long-run planning was greater for time than for money. All of these results replicate study 2, and each of the pairwise simple effect contrasts was significant. Figure 1 shows the means with error bars reflecting plus and minus one standard error.

*Analysis of Proportion of Diary Surveys Reporting Actual Planning.* We found a similar pattern to propensity to plan scores when we analyzed the mean actual planning

**FIGURE 1**

STUDY 3: MEAN PROPENSITY TO PLAN SCORES
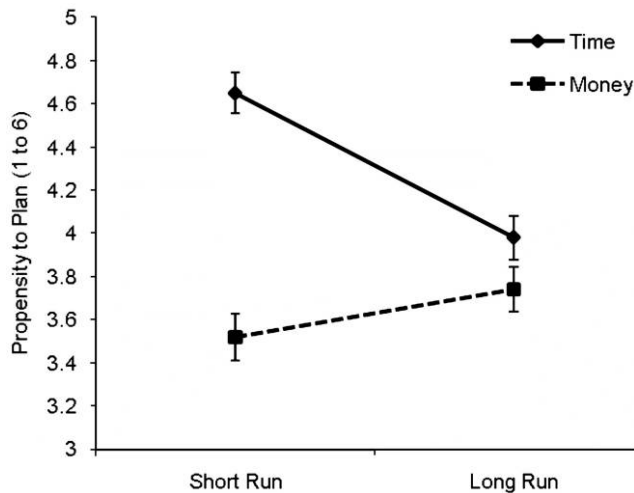


NOTE.—Error bars represent plus and minus one standard error.

scores (proportion of completed diary surveys reporting a plan of each type). Means and standard deviations were: time in the short run ($M = 0.56$, SD $= 0.28$), time in the long run ($M = 0.18$, SD $= 0.21$); money in the short run ($M = 0.22$, SD $= 0.22$); money in the long run ($M = 0.11$, SD $= 0.16$). A repeated-measures ANOVA showed large main effects of resource ($F(1, 88) = 115.93$, $p < .0001$) and horizon ($F(1, 88) = 175.93$, $p < .0001$), and a large resource $\times$ horizon interaction ($F(1, 88) = 43.71$, $p < .0001$). People plan much more for time in the short run than the long run ($F(1, 88) = 138.12$, $p < .0001$), but this effect of time horizon on planning is much weaker for money than for time. Figure 2 shows these means with error bars reflecting plus and minus one standard error. The only discrepancy between the patterns for propensity to plan and actual planning is that the planning scale scores were higher for long-run money than for short-run money, but people reported more actual plans for short-run than for long-run money use.

*Correlations of Actual Planning with Propensity to Plan Scores.* We assessed predictive validity of the four propensity to plan scores for the proportion of completed surveys for which the respondent reported making a plan in the last two hours in each of the four categories (actual planning behavior). Table 6 shows the correlations among the four propensity to plan scores and the four measures of actual planning behavior. In the upper left quadrant of table 6, the four propensity to plan scores are correlated but show good evidence of discriminant validity by commonly accepted tests and heuristics (Anderson and Gerbing 1988; Fornell and Larcker 1981).

The correlations between propensity to plan scores and

actual planning behavior indicate that the scales predict actual planning behavior. Three of four correlations were positive and significant (LRM $r = .22$, $p < .05$; SRT $r = .43$, $p < .0001$; LRT $r = .24$, $p < .05$), and the fourth was also positive, though it failed to reach significance ($r = .16$, $p = .13$).

Table 7 shows a series of hierarchical regressions similar to those estimated in study 2. As noted above, domain specific propensity to plan scales predicted the matching actual planning behavior when entered alone for all but short-run money planning. For all but actual long-run money planning, the matching scale had a significant or marginally significant partial effect when entered into the full model along with the three nonmatching scales. In no case was the full model with four propensity to plan scales significantly more predictive than the model using the "matching" scale alone ($p > .10$ for all four actual planning measures).

## Discussion of Study 3

Study 3 had two main results. First, replicating our findings from study 2, we found that people plan significantly more for the short run than the long run, that people plan more for their use of time than their use of money, and that the difference between short-run and long-run planning is more pronounced for time than for money. This pattern was evident both in the planning scales themselves (in survey 1) and in the reports of actual plan formation in the 2 hours before filling out each diary survey. We find greater planning for time in the short run compared to the long run, but much more similar levels of planning for money in the short and long runs. This may explain Zauberman and Lynch's (2005) finding that people discount future time more than future

**FIGURE 2**

STUDY 3: FREQUENCY OF PLAN FORMATION
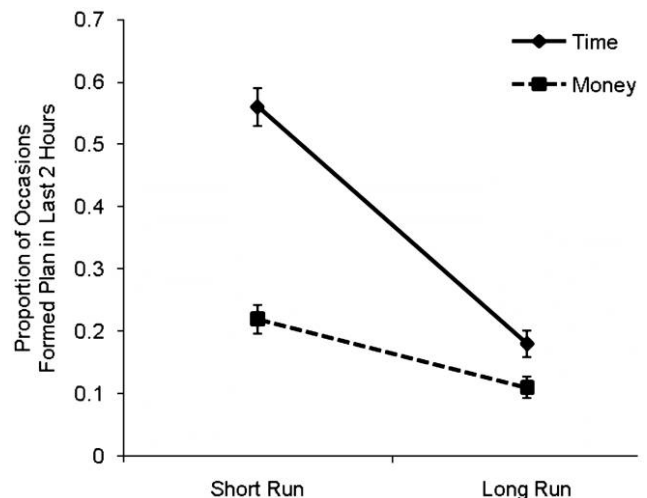


NOTE.—Error bars represent plus and minus one standard error.

**TABLE 6**

STUDY 3: CORRELATIONS AMONG FOUR PROPENSITY TO PLAN SCALES AND ACTUAL PLANNING

| | SRM-PP | LRM-PP | SRT-PP | LRT-PP | SRM-actual | LRM-actual | SRT-actual | LRT-actual |
|---|---|---|---|---|---|---|---|---|
| SRM-PP | 1.00 | | | | | | | |
| LRM-PP | .48* | 1.00 | | | | | | |
| SRT-PP | .03 | .17 | 1.00 | | | | | |
| LRT-PP | .03 | .38* | .54* | 1.00 | | | | |
| SRM-actual | .16 | .00 | .03 | .04 | 1.00 | | | |
| LRM-actual | .31* | .22* | .00 | .11 | .44* | 1.00 | | |
| SRT-actual | −.02 | .11 | .43* | .33* | .26 | .28* | 1.00 | |
| LRT-actual | .11 | .10 | .05 | .24* | .49* | .39* | .24* | 1 |

NOTE.—The first four rows in the matrix show correlations with scores on our four propensity to plan scales: short-run money, long-run money, short-run time, and long-run time. The second four rows show correlations with our measures of actual planning behavior in each category—that is, the proportion of completed diary surveys in which the respondent reported making a plan in the last 2 hours involving the use of money in the next day, money in the next month, time in the next day, or time in the next month.

*Significant at $p < .05$.

**TABLE 7**

STUDY 3: PREDICTIVE VALIDITY OF THE PROPENSITY TO PLAN SCALES FOR ACTUAL PLANNING

| | Predictor variable | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | SRM | | LRM | | SRT | | LRT | | |
| Dependent variable | B | t-value | B | t-value | B | t-value | B | t-value | $R^2$ |
| Actual planning to spend money in short run: | | | | | | | | | |
| Step 1 | .03 | 1.52 (NS) | . . . | . . . | . . . | . . . | . . . | . . . | .03 |
| Step 2 | .05 | 1.82* | −.03 | −1.06 (NS) | −.00 | −.03 (NS) | .02 | .61 (NS) | .04 |
| Actual planning to spend money in long run: | | | | | | | | | |
| Step 1 | . . . | . . . | .04 | 2.11** | . . . | . . . | . . . | . . . | .05 |
| Step 2 | .04 | 2.35** | .01 | .42 (NS) | −.01 | −.67 (NS) | .02 | .95 (NS) | .11 |
| Actual planning to spend time in short run: | | | | | | | | | |
| Step 1 | . . . | . . . | . . . | . . . | .13 | 4.48** | . . . | . . . | .20 |
| Step 2 | −.01 | −.49 (NS) | .01 | .25 (NS) | .11 | 3.12** | .04 | .97 (NS) | .20 |
| Actual planning to spend time in long run: | | | | | | | | | |
| Step 1 | . . . | . . . | . . . | . . . | . . . | . . . | .05 | 2.26** | .06 |
| Step 2 | .03 | 1.11 (NS) | −.01 | −.56 (NS) | −.03 | −.91 (NS) | .07 | 2.35** | .08 |

NOTE.—For none of the four domains did the four predictor model fit significantly better than the one predictor model, $F(3, 80) = 0.76, 1.19, 0.34,$ and $0.33,$ respectively. NS = not significant.

*$p < .10$.

**$p < .05$.

money and that they expect more growth in "slack" in the future for time than for money. Planning is a response to overcoming constraints; if people are more aware of short-run time constraints than long-run time constraints and short-run and long-run money constraints, this might explain the patterns of actual planning observed. More plans create more constraints, resulting in a positive feedback loop where plans and lack of slack build on each other.

Second, we tested the ability of the propensity to plan scales to predict frequency of actual planning behavior. Taken as a set, the scales showed good predictive validity. Prediction was in general better for the actual planning of time in the short run and the long run than for actual planning for money in the short run and the long run. Actual short-

and long-run time planning were predicted by their matched scales when those scales were entered alone; when entered with the full battery of scales, only the "matching" scale had a significant partial effect. The picture was mixed in predicting actual planning for the use of money. Actual short-run money planning had no significant zero order relationship with the scale of propensity to plan for the short-run use of money, and it had only a marginally significant effect in the full model with all four scales. Actual long-run money planning had a significant zero-order relationship to propensity to plan for long-run use of money, but no significant partial effect in the model with all four scales because of overlap with propensity to plan for money in the short run.

## STUDY 4: PROPENSITY TO PLAN PREDICTS USE OF COUPONS AND PRECOMMITMENT DEVICES TO AVOID PROCRASTINATION

Study 4 makes three contributions to the validation of our propensity to plan scales. First, we examine test-retest reliability of our scales. Second, we provide further evidence of nomological validity of our propensity to plan scales for the important consumer behavior of coupon use. Here, we expect to find that consumers who tend to plan the use of their money will be more likely to use coupons than consumers who do not plan the use of their money. Third, we connect our measures of propensity to plan for the use of time to findings about procrastination in the literature on intertemporal choice. Ameriks et al. (2007) and Bagozzi and Dholakia (1999) hypothesize that planning is an antecedent to self-control activities. Consumers want to tackle tasks that are unpleasant in the short run but valuable in the long run, but because of present-biased preferences, they procrastinate. "Naifs" always believe that tomorrow will be different. "Sophisticates" who understand and plan to overcome their self-control problems may use precommitment devices to increase costs of noncompliance to ensure that they act in accordance with their long-run goals (Laibson 1997; Thaler and Shefrin 1981; Wertenbroch 1998). Ariely and Wertenbroch (2002) demonstrated the spontaneous use of and benefit from self-imposed costly deadlines. Costly deadlines are irrational for consumers who act in accord with their long-run plans, but rational and beneficial for consumers who believe that they may be tempted to procrastinate in the future. Long-run planners should be more likely than non-long-run planners to consider other constraints on their time and recognize the temptation and costs of procrastination. As a result, individuals who plan their long-run use of time will impose earlier costly deadlines on themselves than will individuals who do not plan their long-run use of time.

### Method

*Participants.* One-hundred twenty-six undergraduate students, graduate students, and visitors to the University of North Carolina were recruited in front of the student union to participate in study 4 and other unrelated studies in exchange for $4. Two participants failed to complete the money-long scale and were excluded from all analyses.

*Materials, Procedures, and Dependent Measures.* Participants completed measures of deadline setting, coupon use, and propensity to plan on a weekday when summer classes were in session. Participants first read a scenario modeled after Ariely and Wertenbroch's (2002) studies, in which they were asked to imagine that for one of their fall courses, two 10-page papers were due by the end of the thirtieth class session. They had the option of imposing deadlines on themselves for each paper; to ensure that the (hypothetical) deadlines were costly, a 1-point penalty would

be applied each day that a paper was late. Participants were informed that they could set each deadline for any class between the fifth and thirtieth sessions and then reported the deadlines, if any, they would impose on themselves. The mean date of the two deadlines was taken as a measure of use of costly deadlines. Those choosing maximal flexibility by not imposing costly deadlines could record both deadlines as the last day of class.

Next, participants answered several questions related to coupon use. The number of coupon users was relatively low ($n = 31$), so we focus on coupon use as a dichotomous measure ("Have you used a coupon to make a purchase in the past week?" $1 =$ yes, $0 =$ no).

Finally, each participant completed the money-short, money-long, time-short, and time-long six-item propensity to plan scales, in that order. After completing a few unrelated tasks, participants recorded their e-mail addresses if they were interested in participating in a $5 Web survey later in the summer. Interested participants were e-mailed between 2 and 6 weeks later and invited to participate in a brief Web survey containing the four six-item propensity to plan scales. Forty participants completed the follow-up survey for $5.

### Results

*Mean Propensity to Plan.* As in the previous studies, there was a significant interaction between resource (time, money) and planning horizon (short, long) on propensity to plan ($F(1, 123) = 24.14$, $p < .0001$). Means (standard deviations) were 4.08 (1.02), 4.11 (1.02), 4.49 (1.02), and 3.81 (1.18) for money-short, money-long, time-short, and time-long, respectively. As we found before, propensity to plan scores were higher for the short run than for the long run for time ($F(1, 123) = 53.90$, $p < .0001$) but not for money ($F < 1$, NS).

*Self-Imposed Deadlines.* As expected, participants high in propensity to plan the long-run use of their time self-imposed earlier costly deadlines than did participants low in propensity to plan the long-run use of their time; the other three propensity to plan scales had no such predictive power. This was true when each scale was entered individually (time-long: $B = -1.077$, $t(120) = -2.36$, $p = .02$; all other planning scales: $|B|$'s $< .560$), $|t|$'s $< 1.05$, $p$'s $> .25$), and when all scales were entered jointly (time-long: $B = -1.152$, $t(117) = -1.99$, $p < .05$; all other planning scales: $|B|$'s $< .35$, $|t|$'s $< 1$, $p$'s $> .5$). A model comparison test revealed that the joint addition of the other propensity to plan scales (money-short, money-long, and time-short) did not explain significant variance above and beyond that explained by time-long alone, $F(3, 117) < 1$, $p > .5$.

*Coupon Use.* We expected coupon use to be most related to propensity to plan for money in the long run. Correlations between coupon use in the past week and each planning scale revealed significant correlations between coupon use and money-short ($r = .18$, $p < .05$), and money-long ($r = .20$, $p = .03$) as expected. As expected, we found

no relation of coupon use with SRT ($r = .09$, $p > .3$); unexpectedly, we found a significant correlation with LRT ($r = .19$, $p = .03$). Therefore, as predicted, long-run planning for money is related to coupon use, but it is not a unique predictor.

*Test-Retest Reliability.* Table 8 shows that all four propensity to plan scale versions showed good test-retest reliability from the original testing to the retest: retest correlations ranged from .69 to .77. A median split of participants according to the interval length between time 1 and time 2 revealed no meaningful differences in retest reliability between the halves. The scales also generally showed good discriminant validity over time by having weaker prediction of trait *i* at time 2 from trait *j* at time 1 if *i* and *j* did not match. For money-short, money-long, and time-short, the test-retest correlations exceeded the correlation of these time 1 measures with a time 2 measure from any other trait and of these time 2 measures with a time 1 measure for any other trait ($r$'s between .24 and .37). For time-long at time 1, the correlation was nonsignificantly higher with the time 2 measure of SRT ($r = .75$) than with LRT ($r = .69$).

## Discussion of Study 4

Study 4 provided evidence that our propensity to plan for money versions of the scales predicted self-reported coupon use (although not uniquely). Study 4 also showed that propensity to plan the long-run use of time significantly and uniquely predicted the self-setting of costly deadlines to prevent procrastination in the completion of assignments in a paradigm modeled after Ariely and Wertenbroch (2002). Finally, test-retest reliabilities averaged .73 in study 4, and we judge these reliabilities to be encouraging. It is also evidence of the domain-specific validity of the scales that cross-domain correlations between measures at time 1 and time 2 were, for the most part, substantially lower than within-domain correlations.

## STUDY 5: VERY LONG-RUN PROPENSITY TO PLAN FOR MONEY PREDICTS CREDIT SCORES

Many high stakes consumer decisions require financial planning about expenses farther into the future than the 1–2 months referenced in the long-run versions of the scale tested in studies 1–4. Moreover, we anticipate that most adopters would use one version of our scale rather than multiple versions of the scale. In study 5, we tested a version of our scale adapted to refer to planning "very long-run" use of money—money use over the next 1–2 years.

### Method

We embedded our six items in a longer survey by Bloom, Bolton, and Cohen (2009) studying consumers' use of credit cards and dysfunctional "debt-consolidation" loans, along with measures of demographic covariates. Respondents from a special online panel had agreed to allow FICO credit scores and their components to be linked to their (anonymous) respondent IDs in surveys. Our sample included a general sample of adults matching the U.S. Census on age, region and income ($N = 1,201$), and an oversample of consumers with poor credit ($N = 600$) who answered 1, 2, 3, or 4 to "How do you think banks or credit card companies would rate your credit? $1 =$ Very Poor, $10 =$ Excellent." The entire survey took about 20 minutes to complete.

The main dependent variable was the consumer's FICO credit score. According to MyFico.com (2009, 5), FICO scores range from 300 to 850, reflecting types of credit in use, payment history, amounts owed, length of credit history, and new credit. The main independent variable was the respondent's "very long-run" propensity to plan the use of money, with all items worded to refer to planning about the next 1–2 years. We also measured various demographic covariates and the Ameriks et al. (2003) item on time spent vacation planning.

**TABLE 8**

STUDY 4: TEST-RETEST CORRELATIONS

|  | SRM-PP T1 | LRM-PP T1 | SRT-PP T1 | LRT-PP T1 | SRM-PP T2 | LRM-PP T2 | SRT-PP T2 | LRT-PP T2 |
|---|---|---|---|---|---|---|---|---|
| SRM-PP T1 | 1 | | | | | | | |
| LRM-PP T1 | .29 | 1 | | | | | | |
| SRT-PP T1 | .34* | .16 | 1 | | | | | |
| LRT-PP T1 | .30 | .36* | .71* | 1 | | | | |
| | | | | | | | | |
| SRM-PP T2 | .77* | .28 | .34* | .32* | 1 | | | |
| LRM-PP T2 | .24 | .69* | .33* | .56* | .31 | 1 | | |
| SRT-PP T2 | .37* | .34* | .77* | .75* | .47* | .56* | 1 | |
| LRT-PP T2 | .25 | .49* | .53* | .69* | .40* | .77* | .70* | 1 |

NOTE.—The first four rows in the matrix show correlations with scores from the initial testing on our four propensity to plan scales: short-run money, long-run money, short-run time, and long-run time. The second four rows show correlations with scores from the follow-up testing 2–6 weeks later. The diagonal in the lower left square shows test retest reliabilities (.77, .69, .77, .69). Only participants who completed the follow-up survey are included in the above table ($n = 40$).
  *Significant at $p < .05$.

## Results and Discussion

Figure 3 shows the zero-order relationship between very long-run propensity to plan and median FICO scores at each propensity to plan score. We regressed individual respondents' FICO scores on propensity to plan, income (continuously measured, 1 = < \$20,000, 11 = > \$200,000, omitting 28 "prefer not to state" respondents), education (continuously measured, 1 = eleventh grade or below, 7 = master's degree or above), a gender dummy, a set of 11 ethnicity dummies, and the Ameriks et al. (2003) item for time spent vacation planning; 1,304 respondents from the original sample of 1,801 had complete data on all these measures. A preliminary analysis regressing propensity to plan on income, education, gender, and ethnicity indicated that propensity to plan was weakly related to income (corroborating our suggestive income results from study 1; $B = .038$, $F(1, 1{,}289) = 4.82$, $p = .028$) and education ($B = .051$, $F(1, 1{,}289) = 5.44$, $p = .020$), and unrelated to gender and ethnicity ($p$'s > .3).

The main result was that FICO scores increased with propensity to plan ($B = 15.3$, $F(1, 1{,}287) = 37.18$, $p < .0001$). Specifically, a 1-point increase in propensity to plan (on its 6-point scale) was associated with a 15.3-point increase in FICO score, holding the effects of all other predictor variables constant. Gender was not a significant predictor ($F(1, 1{,}287) = 0.06$, $p = .80$), but spending more time on vacation planning ($B = -4.8$, $F(1, 1{,}287) = 5.03$, $p = .025$), income ($B = 16.6$, $F(1, 1{,}287) = 124.13$, $p < .001$), education ($B = 12.1$, $F(1, 1{,}287) = 40.67$, $p < .001$), and ethnicity ($F(11, 1{,}287) = 6.69$, $p < .001$) all had significant partial relationships with FICO scores.

To more fully understand the magnitude of these effects, consider the impact of FICO scores on the cost of credit: individuals with lower FICO scores are riskier borrowers and face higher interest rates. Consider the example of a white male with an associate's degree earning \$35,000 per year and average propensity to plan for vacations. If his propensity to plan for his use of money over the next 1–2 years was equal to the sample mean (3.68), we predict that he would have a FICO score of 652 and pay 5.887% APR on a 30-year, \$200,000 mortgage, or \$1,185 per month. If his propensity to plan for his use of money over the next 1–2 years was one standard deviation above the sample mean (4.90), we predict that he would have a FICO score of 671 and pay 5.457% APR on a 30-year, \$200,000 mortgage, or \$1,130 per month. This is a difference of \$55 per month, \$660 per year, or \$19,800 over the life of the loan (interest rates as of September 1, 2009, calculated from MyFico.com). Having a higher propensity to plan one's very long-run use of money has a very real effect on welfare through effects on the cost of credit.
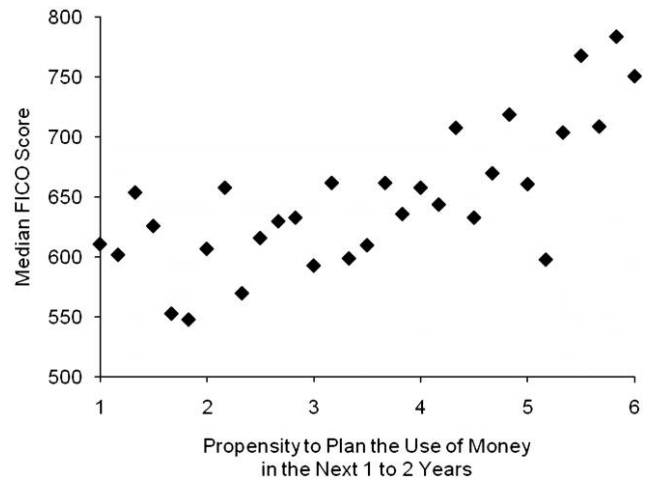
## GENERAL DISCUSSION

### Summary of Findings

In this research, we developed and validated six-item versions of a propensity to plan scale that ask the same ques-

**FIGURE 3**

STUDY 5: MEDIAN FICO SCORES AS A FUNCTION OF PROPENSITY TO PLAN



tions but differ in whether they reference planning for time or for money and whether they reference planning for the next 1 or 2 days, months, or years. Our interest in these particular initial applications of our scale to compare time and money planning was motivated by work showing that people think differently about these two basic resources (Liu and Aaker 2008; Mogilner and Aaker 2009; Okada and Hoch 2004; Saini and Monga 2008; Soman 2001; Zauberman and Lynch 2005). Our interest in comparing planning in the short run to planning in the long run came from work on intertemporal choice that shows that people seem to think about the next day or so in a sharply different way than they think about events a few weeks or months into the future (Laibson 1997; Soman 1998; Trope and Liberman 2003; Zauberman 2003). Across five studies, we showed evidence that these applications of the scale are psychometrically sound. We briefly summarize our findings as follows:

- The four versions of the scale showed discriminant validity from each other and from related constructs. Our propensity to plan for money scales were better predictors of frugality and impulse buying than the Ameriks et al. (2003) financial plan questions, showing incremental validity over the Ameriks et al. measures.
- All four versions showed evidence of differential correlation with theoretically related constructs. The money-related constructs of frugality, impulse buying, coupon proneness, value consciousness, and being a tightwad were more strongly related to propensity to plan for money than for time in 15 of 20 tests. Self-reported use of coupons was more strongly related to propensity to plan for money than for time in three of four tests. Similarly, the time-related constructs of conscientiousness, intolerance of uncertainty, need for closure, and self-control showed higher correlations with propensity to plan for time than for money on 12 of 16 tests.

- For time, individuals plan much more for the short run than the long run. For money, individuals plan more equally for the short run and the long run. This pattern was observed for both actual planning and self-reported propensity to plan.
- Formation of implementation intentions to acquire big ticket new technologies were better predicted by propensity to plan the use of time and money in the short run than in the long run.
- Domain specificity was not extreme. In study 2, we found that self-reported use of time in the long run as planned was as well predicted by propensity to plan time in the short run as in the long run. Similarly, in study 4, a time 1 measure of propensity to plan for time in the long run was as predictive of time 2 propensity to plan for the short-run use of time as for the long-run use of time.
- Also in study 4, we found that only long-run planning for time predicted the use of costly deadlines to control procrastination on long-term school assignments.
- In study 5, we adapted our propensity to plan for money scale to the next 1–2 years, rather than days or months. This version of the scale significantly predicted FICO credit scores, holding constant income, education, gender, and ethnicity.

## Relation to Intertemporal Choice Literature and Future Research

Because planning is so central in consumers' lives, there are many opportunities for future research tying propensity to plan to such fundamental topics such as learning and search. Those high in propensity to plan are likely to learn more in consumption situations due to spontaneous goal setting (Huffman and Houston 1993). High planners may be more efficient shoppers via trip chaining (Brooks, Kaufman, and Lichtenstein 2004).

We conjecture that people plan more for time in the short run than the long run but not more for money in the short run than the long run if short-run time plans play a greater role in attaining proximal rewards. Financially constrained consumers may show an opposite pattern. Time primes increase product liking more than money primes, but not for materialists (Mogilner and Aaker 2009). Materialists and the financially strapped may plan more for money than time.

Differences in short-run and long-run planning in a given domain are particularly relevant for intertemporal choice. For example, Lynch (2009) speculated that many payday loan borrowers perceive their financial shortfall to be temporary rather than systemic. They are surprised to be unable to repay, perhaps because they planned more for competing uses of money in the present than for similar competing uses in the future. One motive for applying our propensity to plan scale to time and money planning in the short and long runs was the finding that consumers discount future time more heavily than future money (Soman 1998; Zauberman and Lynch 2005). In studies 2, 3, and 4, we found

greater propensity to plan for time in the short run compared to the long run, but much weaker differences in propensity to plan for money. In study 3 the frequency of actual self-reported plan formation had a similar pattern. This helps explain why people expect to have more spare time in a month than today, but most do not expect to have more spare money in a month than today (Zauberman and Lynch 2005).

Differences in propensity to plan may also play a role in the planning fallacy (Buehler, Griffin, and Ross 1994). Spiller and Lynch (2009) found that people underestimated the amount of time but not money required to complete their holiday shopping. Ironically, greater planning led to a larger planning fallacy in each domain, presumably because high planners focus on the path to success rather than the detours to distraction. People planned more for time than for money, and this mediated the greater planning fallacy for time than for money.

Study 4 indicated that propensity to plan for use of time in the long run was associated with the use of costly self-control devices to prevent procrastination. Future research should consider how propensity to plan relates to the concept of "sophistication" (i.e., anticipation of future impatience) in the literature on present-biased preferences (Laibson 1997; O'Donoghue and Rabin 2001; Zauberman 2003). Are individual differences in sophistication domain specific or domain general across time, money, and other resources (Bernheim and Rangel 2004)?

The relationship between propensity to plan and credit scores indicates that our scale has many potential applications to consumer financial decision making and behavioral finance. Consumers have shocking financial illiteracy about major financial decisions regarding mortgages, retirement savings, and decumulation of savings in retirement (Brown and Poterba 2006; Lusardi and Mitchell 2007). We conjecture that those who are most illiterate are those with the lowest propensity to plan for these very long-run uses of money.

## APPENDIX A

## FLOW OF STUDIES 2–4

### Study 2

Phase 1:
1. 19 short-run propensity to plan for money items
2. 19 short-run propensity to plan for time items
3. Conscientiousness
4. Intolerance for uncertainty
5. Need for closure
6. Self-control

Items were randomly interspersed among and within constructs with the constraint that no page included more than four items per construct. All items were on 6-point scales.

Phase 2, 1 week later:
1. 19 long-run propensity to plan for money items
2. 19 long-run propensity to plan for time items

3. Frugality
4. Impulse buying
5. Tightwad-spendthrift
6. Value consciousness
7. Coupon proneness
8. Spent money as planned short-run
9. Used time as planned short-run

Phase 3, e-mailed to participants 5 weeks after completion of phase 2:
1. Spent money as planned long-run
2. Used time as planned long-run

## Study 3

Survey 1:
1. Participants completed propensity to plan scales for their:
   *a.* Short-run use of money
   *b.* Long-run use of money
   *c.* Short-run use of time
   *d.* Long-run use of time
2. Participants described existing plans and predicted expenditure size in each domain for a different research project.

Surveys 2–9, distributed every other day:
1. 1. Participants reported whether they made plans in the last 2 hours for their:
   *a.* Short-run use of money
   *b.* Long-run use of money
   *c.* Short-run use of time
   *d.* Long-run use of time
2. If they reported making plans, participants briefly described each plan.
3. Participants reported if they completed either short-run plan from the previous survey.
4. If they had not yet reported completing their short-run plans from survey 1, participants reported whether they completed those plans. If they had completed them, they reported how much time or money they spent on them for a different research project.

## Study 4

Phase 1, administered in the student union along with other unrelated studies:
1. Participants responded to a class deadline scenario based on Ariely and Wertenbroch (2002).
2. Participants reported whether they used coupons in the past week.
3. Participants completed the time 1 propensity to plan scales for their:
   *a.* Short-run use of money
   *b.* Long-run use of money
   *c.* Short-run use of time
   *d.* Long-run use of time

Phase 2, administered online 2–6 weeks later:
1. Participants completed the time 2 propensity to plan scales for their:
   a. Short-run use of money
   b. Long-run use of money
   c. Short-run use of time
   d. Long-run use of time

## APPENDIX B

## FINAL FORM OF FOUR VERSIONS OF THE PROPENSITY TO PLAN SCALE

Propensity to Plan for Money—Short Run:

1. I set financial goals for the next few days for what I want to achieve with my money.
2. I decide beforehand how my money will be used in the next few days.
3. I actively consider the steps I need to take to stick to my budget in the next few days.
4. I consult my budget to see how much money I have left for the next few days.
5. I like to look to my budget for the next few days in order to get a better view of my spending in the future.
6. It makes me feel better to have my finances planned out in the next few days.

Propensity to Plan for Money—Long Run:

1. I set financial goals for the next 1–2 months for what I want to achieve with my money.
2. I decide beforehand how my money will be used in the next 1–2 months.
3. I actively consider the steps I need to take to stick to my budget in the next 1–2 months.
4. I consult my budget to see how much money I have left for the next 1–2 months.
5. I like to look to my budget for the next 1–2 months in order to get a better view of my spending in the future.
6. It makes me feel better to have my finances planned out in the next 1–2 months.

Propensity to Plan for Time—Short Run:

1. I set goals for the next few days for what I want to achieve with my time.
2. I decide beforehand how my time will be used in the next few days.
3. I actively consider the steps I need to take to stick to my time schedule the next few days.
4. I consult my planner to see how much time I have left for the next few days.
5. I like to look to my planner for the next few days in order to get a better view of using my time in the future.
6. It makes me feel better to have my time planned out in the next few days.

Propensity to Plan for Time—Long Run:

1. I set goals for the next 1–2 months for what I want to achieve with my time.
2. I decide beforehand how my time will be used in the next 1–2 months.
3. I actively consider the steps I need to take to stick to my time schedule in the next 1–2 months.
4. I consult my planner to see how much time I have left for the next 1–2 months.
5. I like to look to my planner for the next 1–2 months in order to get a better view of using my time in the future.
6. It makes me feel better to have my time planned out in the next 1–2 months.

|  | Study 1 | | Study 2 | |
| --- | --- | --- | --- | --- |
|  | Mean | SD | Mean | SD |
| Propensity to plan for money—short run | 3.66 | 1.05 | 3.11 | 1.06 |
| Propensity to plan for money—long run | 3.67 | 1.01 | 3.23 | 1.03 |
| Propensity to plan for time—short run | 3.46 | 1.06 | 4.64 | .93 |
| Propensity to plan for time—long run | 3.25 | 1.13 | 3.84 | 1.04 |

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